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AMERICAN DYESTUFF REPORTER

Vol. III, No. 11

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A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3 New York, September 9, 1918 No. 11

PLEASE PAGE SHERLOCK HOLMES!

Baffling Mystery of French Government's Behavior Toward German Dye Works Calls for Services of Holmes or the Infallible Dupin

WITH a large number of the civilized nations of the world scheming to overthrow the former dye monopoly enjoyed by Germany, the stories of progress made by each of these many units make most interesting reading for the balance of the workers, and furnish prolific sources of alternately commendatory and derogatory—but in the main highly entertaining—comment in the trade press. We have, in the past, been kept pretty well posted as to the progress made by the various nations as, step by step, they have advanced themselves nearer to that day when the German pretensions to wizardry in the production of synthetic colors shall stand exposed to the world for the hollow sham that it is—that is to say, we have been kept pretty well posted as to the progress of all the nations with the exception of France.

News of this country's activities in this direction has not come to these shores as rapidly as one could wish. For one thing, it is only natural that there would be less news to give, for a man engaged in a desperate struggle to tear himself away from the clutches of a giant squid which has fastened its loathsome tentacles about his body will not pause to wonder how that new suit he ordered last week is going to fit him. For us, "three thousand miles away," and even for England, it is hard to experience just the same feelings which France is experiencing; there is all the difference between watching the progress of a fight, in which your sons are engaged, taking place across the street, and in having this same fight taking place all over your front porch and in your parlor. In the first place, one can continue the preparation of a hearty dinner for the returning combatants, while in the second, one is too busy dodging things to make a pronounced success of anything requiring so much skill and finesse. Hence, France has made actually less progress than any of the others, and there is a dearth of news from our Gallic colleagues which greatly enhances the interest in whatever brief reports do succeed in reaching us. And, viewed in this light, the latest word from France becomes all the more astonishing.

Of all the nations now independently working out their coal-tar chemical destinies, which include our own country, England, Italy, Japan and Sweden, not one has suffered anything like as much at the hands of the Hun as has this self-same France.

The record of German crimes within the borders of that brave but unhappy

country is, as everyone well knows, something to make the blood run cold —and then boil over! France has every reason which her Allies have for wishing the military and industrial overthrow of Germany, *plus* some additional reasons which only Belgium or Armenia can ever truly appreciate. Of the dye producing countries, France's personal hatred of all things German must of necessity be the most intense, and must average the nearest to 100 per cent among her population.

Is it not strange, then, that it is in France, the spirited; France the courageous and indomitable, France with a million bloody outrages to avenge and with a million insults to wipe out—in France, of all nations—that we should find the greatest apparent toleration of potential German industrial strongholds on her own soil, and the least apparent disposition to treat these possible rivals as they so richly deserve at her hands, and as all the other allied nations—with even less cause—are treating them?

But it is even so. The situation, as revealed by recent reports, is substantially as follows:

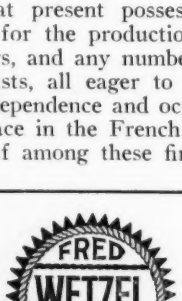
There are located on French soil, at the cities of Lyons and Creil, three large German dye works which were running full blast before the war under German management, but which since 1914 have been officially "sequestrated" by the French Government, and have since produced nothing more useful than a vast deal of venomous verbosity as to their ultimate disposition.

France at present possesses seven companies for the production of synthetic colors, and any number of brilliant chemists, all eager to win commercial independence and occupy their rightful place in the French dye markets. Chief among these firms is the Compagnie Nationale de Matieres Colorantes, which is equipped with a capital of 40,000,000 francs and is aided by the French Government, although operating as an independent concern. All of these have expressed themselves to the effect that they regard the presence of the German dye works in France as a menace to the future of the industry, and are clamoring for the German works to begin making French dyes instanter.

Yet, although the Compagnie Nationale was organized for the express purpose of ending the Teutonic dye monopoly, the French Government refuses to allow it to take over the works at Lyons and Creil, and this is rightfully regarded by the Gallic manufacturers as a needless official stumbling block and as a serious setback to their progress.

In explaining its attitude, the Government reveals the fact that it defines the term "sequestration" entirely to the benefit of Germany. As the President of France interprets it, sequestration of alien property must not mean spoliation, but, instead, conservation of the property. The sequestrator, he holds, becomes the keeper of a pantechnicon, and must eventually deliver the sequestrated goods intact to the original holders. He naively adds that therefore the German color works must not be turned over to French manufacturers because in this way German trade secrets would fall into their hands, and the pantechnicon "would be damaged to that extent"!

Ye gods! The French are famous for their politeness the world over, and their gallantry toward a foe is traditional, but we are sure that Alphonse and Gaston in their palmiest days never perpetrated anything quite so quixotic in the line of perverted punctiliousness as this! And yet, withal, there is something characteristically French about the proceeding which proves that the spirit of Richard Coeur de Lion still lives in his descendants. And while we cannot but take issue with the decision and hope for its speedy reversal, we must confess to an unbounded ad-



miration for the qualities of a race which prompted a course of action so needlessly knightly. It is much akin to the conduct of the man who was "so straight that he bent over backwards"!

We are quite at a loss to account for the line of reasoning of the French Government in this matter save on the grounds indicated above. This, perhaps, is the true explanation—that it springs from an instinct of the French which is quite unquenchable—but leaving it aside for the present, there are only two other conclusions left. One we hold to be impossible, and the other totally unbelievable. They are furnished by a commentator who attributes the stand taken to "timidity or political perversity of the French Government," and hints darkly that there may be some political influences at work which are adverse to the Compagnie Nationale. Well, of this we are sure: that the French Government, of which Premier Clemenceau, with his well-earned sobriquet "The Tiger," is a typical exponent, is utterly without such a thing as timidity anywhere in its make-up. Nor does it seem possible that the complete adjournment of politics can be confined solely to this country.

It may be that the French Government, burdened as it is with more weighty considerations than it has been called upon to face since the days of The Terror, does not realize fully the true situation with regard to German post-bellum competition, whereas we, being further away from grim actualities, are enabled thereby to gain a better perspective. But certainly this attitude is as puzzling to French chemists and manufacturers as it is to us, and it would really seem to call for the services of our old friend, Sherlock Holmes, or, more appropriately, those of the infallible Dupin, in order to clear it up. Perhaps some of our readers with a more intimate knowledge of conditions in France can provide the true explanation. If so, we should be glad to hear from them. We give it up.

The National Aniline & Chemical Company, Edgewood Arsenal, N. Y., has awarded a contract for the construction of a one-story, 40 x 52, 80 x 80 reinforced concrete, brick and steel plant, at Buffalo River, that State. The estimated cost of the new structure will be $75,000. At the same time plans have also been filed by this company for the erection of a two-story reinforced concrete plant, about 105 x 196, to be used as an addition to its present works at Marcus Hook, Pa. This addition will cost in the neighborhood of $110,000, it is estimated.

Announcement has been made by the Empire Chemical Company, Jersey Avenue, New Brunswick, N. J., that the capital of this concern has been increased from $200,000 to $300,000, to provide for expansion.

To manufacture dyes and chemicals, the Yankee Chemical Company has been incorporated with a capital of $25,000 under the laws of Illinois. The headquarters of the concern are at Chicago.

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SOME NOTES ON UNION DYEING

By C. M. Whitaker, B.Sc.

The present shortage of wool, coupled with the restrictions on its use consequent thereon; is having a revolutionary effect on the textile industries of Great Britain. In order to make the most of the wool available, much ingenuity is being expended on making union cloths by manufacturers who would never have handled mixed fabrics had this shortage of wool not occurred. The natural sequence is that many dyers are now being called upon to dye mixed fabrics who have hitherto never handled them. A few notes on the dyeing of mixed fabrics with some of the dyestuffs available at the present time will not, therefore, be out of place.

The Quickest Method

The quickest method of dyeing mixed fabrics is the single bath method, with the help of suitable direct cotton colors and acid colors which have a good affinity for wool and silk in a neutral bath. Very good results may be obtained if the influence of the following factors is recognized:

1. Structure and nature of materials in the cloth being dyed.
2. Amount of liquor employed in proportion to weight of cloth.
3. Control of temperature.
4. Correct choice of dyestuffs.

Structure and Nature

1. The golden rule in union dyeing is that the cotton must be darker than the wool, otherwise the cotton shows up too prominently—what the trade terms "stares." The structure of the cloth plays a very important part in determining the degree of exactitude with which the cotton must be matched to the wool. If the cotton is well buried, as in a cotton fabric, one need not be particular about the shade of the cotton, so long as it is reasonably covered. If one is, on the other hand, dealing with a cotton warp and woolen weft serge, then it is absolutely essential for the wool and the cotton to be of the same shade, with the cotton the heavier of the two. The structure of mixed hosiery fabrics plays a very important part in the results obtained. A combination of colors which will give a solid shade on one hosiery fabric does not necessarily give as good a result on another quality of hosiery fabric, though dyed under identically the same conditions. Again, a cotton warp gabardine with a botany weft naturally requires different treatment to a mohair pile fabric with a cotton back. Skilled judgment and wide experience, both of fabrics and dyestuffs, are demanded of the successful union dyer.

Amount of Liquor

2. In the single bath method of union dyeing the dyebath is rarely exhausted, except in pale shades, because neither direct cotton colors nor neutral dyeing acid colors have sufficient affinity for the fibre to dye clean out of a neutral bath. Under these circumstances the proportion of liquor used to weight of material plays an important part in the economy of dyestuffs. It follows, therefore, that the less liquor used, the fuller the shade obtained from the same weight of dyestuff. It is, of course, false economy to reduce the volume of liquor so that there is not sufficient room in which to manipulate the cloth efficiently, with uneven results as a consequence. The expense of corecting an uneven piece will easily outweigh the saving of the dyestuff effected. The volume of liquor should, however, be kept as small as possible consistent with good results.

Control of Temperature

3. The proper regulation of the temperature of the dyebath is probably the most important factor in successful union dyeing. The following axiom indicates the general principle to be followed in the regulation of temperature. At low temperatures the dyestuff goes more on to the cotton, whilst at high

FRED WETZEL & CO. N.Y.

temperatures the dyestuff goes more on to the wool. It follows, therefore, that there is a mean temperature at which the wool and cotton will be practically solid when dyed with those dyestuffs which give solid shades. There is an exception to this rule when dyeing light shades with direct cotton dyestuffs. A dyestuff of this class which will give a solid shade at 3 per cent will not give a solid shade at ¼ per cent. In a light shade the bath may be vigorously boiled and still the dyestuff will dye the cotton much heavier than the wool. In these cases the wool must be brought to shade by means of acid dyestuffs which have a good affinity for wool in a neutral dyebath. In the list of dyestuffs suitable for solid shades, the best temperature is given for each individual dyestuff which is suitable for giving a solid shade. It must, of course, be borne in mind that structure of cloth also plays a part in the temperature to be employed. Naturally a hard-twisted, cross-bred wool will require a lower temperature than a solid, loose-spun botany wool. The skill and experience of the dyer is required to form a correct judgment on this point.

CORRECT CHOICE OF DYESTUFFS

4. Good results in union dyeing are naturally unobtainable unless a correct choice of dyestuffs is made. Three classes of dyestuffs are available for the single-bath method of dyeing mixed fabrics:

(*a*) Colors which dye practically a solid shade on mixed fabrics at suitable temperatures.

(*b*) Direct cotton colors which dye the cotton heavier than the wool even at high temperatures, and so may be used for shading the cotton when necessary.

(*c*) Acid colors which have a good affinity for wool in a neutral bath and so may be used for shading the wool if necessary.

A COLOR LIST

In the following lists, colors suitable for the dyeing of mixed fabrics are graded into the above three classes, which will be of assistance to the dyer in choosing the correct dyestuffs.

Colors which dye practically solid shades:

Benzopurpurine 4B, 195 deg. Fahr.

Chlorazol Black E, extra, 195 deg. Fahr.

Chlorazol Brown GR, 195 deg. Fahr.

Chlorazol Brown HX, 185 to 195 deg. Fahr.

Chlorazol Dark Green PL, 175 deg. Fahr.

Chlorazol Green B, 195 deg. Fahr.

Chlorazol Orange R, extra, 185 to 195 deg. Fahr.

Union Black 80379, 195 deg. Fahr.

Union Green BD, 195 deg. Fahr.

Union Navy 81324, 175 to 185 deg. Fahr.

Union Nigger Brown BD, 185 deg. Fahr.

Union Red BD, 195 deg. Fahr.

Union Saxe Blue BD, 195 deg. Fahr.

Union Violet BD, 175 to 185 deg. Fahr.

Union Yellow BD, 195 deg. Fahr.

Direct Cotton Colors which dye the cotton heavier than the wool:

Afghan Yellow GX, R.

Chlorazol Fast Yellow NX.

Chlorazol Blue B.

(*Continued on page* 12)

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VICTORIA BLUE B
VICTORIA BLUE BASE
CRYSTAL VIOLET
CRYSTAL VIOLET BASE
CHROME BROWN
DIRECT BROWN RBR
ACID BROWN 3RR
MALACHITE GREEN
DIRECT GREEN GG
DIRECT ROSE
BENZYL CHLORIDE
PICRAMIC ACID
ORTHONITROPHENOL
PARANITROPHENOL
METAPHENYLENEDIAMINE
PARAPHENYLENEDIAMINE
PHOSGENE
SALICYLIC ACID

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated

A. P. HOWES, Editor and Publisher

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THE SAMPLE NUISANCE

Dyestuff dealers and manufacturers waste thousands of dollars a year in samples which are never tested. One of the methods used by the average buyer of dyestuffs to get rid of a persistent salesman is to tell him to send samples of certain dyestuffs. When they arrive, they are either thrown away or saved for future use.

We do not believe that there is any disposition on the part of the users of dyestuffs to actually profit by the samples they receive. Nevertheless, there are a number of smaller dyers who do use samples thus obtained.

One of the largest print houses in this country always returns samples when they are not sufficiently interested in the dyestuff submitted to make a test. If all of the consumers in the country were to institute this method, it would result in a big saving to the dealers and manufacturers of dyestuffs and would create a much better feeling all around.

It would seem as if it were no more than courtesy to acknowledge receipt of samples, and, if they are tested, to give the results of the test. This cannot possibly do the dyer any harm, and it would be vastly to his advantage if he only would stop to think about the matter.

If, for instance, a dealer submits samples of a certain color and they fail to please, either through not being the correct shade or strength, this information would be of great value in submitting future samples, and would give the dealer or manufacturer a better opportunity to meet the requirements of the dyer.

If consumers generally would make up their minds not to ask for samples of dyestuffs which they do not require, to return those which they receive in which they are not interested, and to make a report on those which they do test, it would certainly lighten the burdens of the dealer and the manufacturer and would save an unnecessary expense which, in the aggregate, runs into very large figures and which is ultimately borne by the consumer himself as part of the cost of doing business. Moreover, such a policy would be distinctly in keeping with the national campaign for the avoidance of waste, and would result in a very considerable conservation of dyestuffs.

AN APPRECIATION

On another page in this issue will be found an advertisement of the Seydel Manufacturing Company, the caption of which reads: "We urge that the Textile Industry support the stand of the AMERICAN DYESTUFF REPORTER for an American Dyestuff Industry."

It is peculiarly gratifying to the publisher to feel that our efforts in behalf of the American dyestuff industry, and particularly the propaganda which we have conducted looking toward the permanent elimination of the German influence in dyestuff circles, has been sufficiently appreciated to warrant a manufacturer in spending money in our columns to tell others of his sympathy with our endeavors.

In this same connection it is most gratifying for us to report a very large response to our circular letters soliciting subscriptions to the REPORTER. We are confident that the textile industry is whole-heartedly behind our efforts, and we wish gratefully to acknowledge the evidences of their support which we have received. Those among our readers who have not as yet sent in subscriptions will find a coupon at the bottom of page 18. We earnestly request that they put themselves on record as endorsing our efforts by signing and returning same to us.

DU PONT AMERICAN INDUSTRIES

DU PONT DYESTUFFS

Du Pont American Industries Exhibit

We extend a cordial invitation to our friends in the textile industry to visit the Du Pont American Industries Exhibit at the Fourth Annual Exposition of Chemical Industries, Grand Central Palace, New York, the week of September 23rd. The exhibit, which will occupy Booths 7, 8 and 9 on the first floor, will contain an interesting and instructive display of over 300 products manufactured by the various Du Pont American Industries in the following lines:

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We will be glad to provide complimentary tickets in limited quantities upon request.

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NOTES ON UNION DYEING

(*Continued from page 9*)

Chlorazol Sky Blue FFS.
Chlorazol Violet WBX.

Acid colors which have a good affinity for Wool in a neutral dyebath:

Bordeaux B.
Cardinal Red J.
Citronine R.
Naphthalene Black 12B, D.
Neutral Wool Navy 79625.
Orange G, IV.

The Two Methods

There are two methods employed in practice, the second method being frequently used by garment dyers:

1. Enter cold, raise to the temperature recommended in half an hour, dye at this temperature for half an hour, shut off steam, and allow to feed in the cooling bath half an hour.

2. Enter at the temperature recommended, work twenty to thirty minutes at this temperature, shut off steam, and work half an hour in the cooling bath.

Both the above methods are used, but the author prefers the former, owing to the fact that the cotton gets well covered before the wool begins to take up the color. No hard-and-fast rule can be laid down as to the length of time to keep the bath simmering. This must be left to the judgment of the individual dyer, since so much depends upon the nature of the wool, also the twist of the yarn, the weave and design of the material. In general practice, however, it may be laid down that vigorous boiling is rarely required, because the wool will usually take the color to the desired extent at the spring boil.

Assistants

The assistants used in the single bath process are Glauber's salt, common salt and occasionally soda ash. Many dyers prefer to use common salt to Glauber's salt, because they claim the former does not soften the goods like the latter. This has been shown by experiment to be due to the fact that a solution of Glauber's salt becomes alkaline on boiling, but becomes neutral again on cooling, whilst a hot solution of common salt remains neutral. Ten to 40 per cent Glauber's salt or 10 to 25 per cent common salt calculated on the weight of the material should be used according to the depth of shade being dyed. Soda ash has the effect of restraining the color from going on to wool too quickly. Its use is advisable when dyeing shoddy which has been stripped with the help of acid. If the goods have by mischance not been perfectly neutralized after stripping, the addition of 1 to 2 per cent of soda ash prevents the dyebath becoming acid; if the dye liquor became acid the color would go on to the wool to the detriment of the cotton.

Black Fast to Milling on Union Waste, Etc.

Chlorazol Black E Extra will be found quite useful for dyeing a black on angora yarns, mixed waste, etc., fast to milling. If the dyed material is aftertreated in a fresh bath for half an hour at 140 deg. Fahr (60 deg. C.) with 3 per cent formaldehyde (40 per cent solution), the fastness to milling of the black against white cotton is considerably improved.

The Two-Bath Method

This method of dyeing the wool and cotton in separate baths has two great advantages over the single bath method, viz.:

We urge that the Textile Industry support the stand of the American Dyestuff Reporter for an American Dyestuff Industry.

SIZINGS—FINISHINGS—SOFTENERS

SEYDEL MFG. CO.
Jersey City, N. J.

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1. Very much faster shades on the wool may be dyed by this method than by the single bath method, owing to the fact that both mordant and acid dyestuffs may be used.

2. Much brighter shades may be obtained since any wool dyestuff may be used, whereas the choice of wool dyestuff for the single bath method is very strictly limited.

The cotton may either be dyed before the fabric is woven with colors which will withstand boiling with acids, such as sulphur or developed dyestuffs, or it may be dyed in the washing machine after the wool has been dyed. This may be done with sumac and iron in the case of blacks and navies, or in the cloths in which the cotton is well covered so that it merely requires to be dyed irrespective of being a match to the wool. The alternative process is to dye the cotton with direct cotton colors which have a good affinity for cotton at low temperatures, coupled with the fact that they do not stain the wool. The following colors will be found most suitable for this purpose and for burl dyeing, viz.:

Afghan Yellow GX, R.
Chlorazol Black E extra for Burl Dyeing.
Chlorazol Blue B.
Chlorazol Brown HX.
Chlorazol Dark Green PL.
Chlorazol Fast Yellow FG.
Chlorazol Orange R extra NX.
Chlorazol Violet WBX.

The above colors may be applied on the milling machine along with the soap or on the washing machine. In the latter case use as assistants 1 pound Glauber's salt or common salt and 2 ounces soda ash per 10 gallons liquor employed. The smaller the amount of liquor employed the fuller the result from the same weight of color. The use of soda ash increases the affinity of the dyestuff for the cotton whilst decreasing the affinity for the wool. The wool will be left the cleaner if the dyestuffs are applied cold, but better value will be obtained if the temperature is raised to 100 deg. Fahr. (40 deg. C.). Omit the soda ash and use common salt when dyeing with Afghan Yellow. The affinity of the above colors in the soap bath varies considerably. It will be found that Chlorazol Fast Yellows FG and NX and Afghan Yellows GX and R have a poor affinity in the soap baths, but quite good when used with the addition of salt. Chlorazol Black E Extra for burl dyeing, Chlorazol Blue B and Chlorazol Violet WBX are good under both conditions.—*The Dyer and Calico Printer.*

Producers of khaki extract in Japan have temporarily ceased manufacturing this commodity, it is said, in order to strengthen the market, which has fallen off considerably, due to overproduction.

The well-known firm of Ault & Wiborg recently suffered a loss when fire of undetermined origin destroyed one of the new frame buildings of their plant at St. Bernard, Ohio. The extent of the damage has not been made public.

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DYESTUFFS

By Dr. Louis J. Matos

We give herewith the fourth and last installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute,* and which, for the benefit of our readers, we are reproducing in four parts.

Part IV

In the ordinary course of dye manufacturing as carried out in the large color works abroad or in the more important dye manufacturing plants in this country, the work is divided about as follows:

First. *Research Chemists.* — These are men with university training. As a rule they enter the dye works under rather humble conditions until they "find" themselves. Generally they specialize in one and sometimes in two groups of colors, and it is seldom that they depart from the confines of their chosen specialty. It is they who experiment and work out what may ultimately appear on the market as a new dye. Their compensation is rather low; lower than men holding corresponding degrees from American universities. Their ambition is to make discoveries that will yield them royalties on account of their discoveries being good sellers. When a man has made a few discoveries and his dyes are on the market his income in the form of salary and royalties gradually increases and he becomes more or less a fixture in the research department. Ample evidence of this is to be found by carefully inspecting the names of patentees of dyes during the last three years, when we find that the same name occurs at various intervals, and, except in a few instances, is connected always with the same firm.

Second. *Factory Chemists.* — These men are also university graduates, but for one reason or another are less adapted to research work, or do not care for the restraint incident to chemical research. It is they who take up the work where the research chemists leave off. They adapt the chemical discoveries and reactions to factory conditions, and in most instances are the dye production supervisors; they are not foremen. Some of them may have under them two or three departments, for which they are responsible. As a rule, it is from the ranks of these chemists that the superintendents or technical directors are obtained.

Third. *Chemical Engineers.*—Owing to their particular training and abilities, these men are responsible for the particular design and installation of the necessary machinery required for manufacturing the various dyes as the results are obtained from both the research chemists and the factory chemists. As a general rule, after the identity of the dye has been proven by the research chemist and after the factory chemist has worked out satisfactorily the sequence of the several operations necessary, even to the production of batches of fifty to one hundred pounds, or even more, and the dye has been demonstrated to be a promising one, it is then that the chemical engineer steps in and designs the plant for its commercial production upon a full factory scale.

Fourth. *The Engineers.*—The engineer department of a dye manufacturing plant goes beyond the corps of chemical engineers, although in some instances these departments may over lead. The engineers, of necessity, are more familiar with the construction of the individual units comprising the plant than the chemical engineers. It is the engineer department that takes care of the construction of the elements of the plant called for by the chemical engineer and factory chemist, and whose advice and assistance is at all times encouraged when necessity requires.

One thing is to be constantly kept in mind, however, regarding the so-called efficiency of German dye plants, and that is the utmost care taken by the

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management to prevent undue intercourse and familiarity between those who comprise the several main departments. There seems to be, in fact there is, a sharp line of demarcation which keeps the various professional groups sharply separated. Unlike the prevailing custom in well-managed American plants, there are seldom, if any, general conferences that have to do with increasing the proficiency of the various departments. In most of the larger German color works there is rather a dense atmosphere of association difficult to penetrate and the existence of which only tends to retard rather than advance the particularly high degree of professionalism. This may be contrary to many preconceived notions gained by the American public, but it is a fact, nevertheless.

In dye establishments, distributing plants and similar commercial enterprises, the technical staff may be conveniently divided into two broad groups as follows:

(1) *Textile Chemists,* who specialize more or less in wool, cotton, silk, union goods, etc.—In some of the larger establishments men to fill these positions have been selected from the ranks of the salesmen who may have had previous mill experience, or from graduates of the various textile schools.

(2) *Dye Laboratory Chemists.*—These are usually boys or young men who entertain the idea that they are chemists, but whose preliminary education combined with lack of chemical training enables them to discharge the duties only of dyer on a miniature scale and consequently they become standardizers or simply shade matchers. These young men become very expert in compounding the dyes of the firm for which they worked and in matching the colors of the firm's competitors. Generally it may be regarded as a mistake for a young man with chemical ambition to lose himself in a standardizing or shade-matching laboratory of a dyestuff house. There is little or no chemical work to be performed, and any knowledge that he may have upon this subject will certainly become stale, since no opportunity is afforded for him to exercise his chemical skill. Except in very few instances have such men ever become valuable technical men in the broad sense of the word, that is, men who are competent to go out into the dye houses of the firm's customers and solve difficult problems in the practical application of dyes or to seek the cause of the trouble when, through one fault or another, the dyestuffs failed to do their work properly.

It is here that I believe many of our textile schools make the mistake of not suggesting to their dyeing students that they should take up the study of dyeing along some one restricted line and specialize in that. For example, wool. It is manifestly impossible for a man who is a wool dyer to be at the same time a skilled cotton dyer or a skilled silk dyer. I mention these points in order to direct your attention to the circumstances surrounding the employment of chemists in the dyestuff industry. It is an industry that offers remarkable opportunity for experimental

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work for young men to take up this particular field, but in order to do it to their own satisfaction and that of their employer, it is necessary that they should give serious consideration to the labors required of them and the amount of knowledge necessary for them to discharge their duties satisfactorily.

I have made mention of the employment of chemical engineers in the dye-manufacturing plants, but the satisfactory employment of a chemical engineer in the above organic chemical industry resolves itself again into some special branch of chemical work that the engineer has particularly studied.

Broadly, the color industry is divided into the production of: Raw materials, intermediates, dye making. Any one of these subdivisions is likely to include one or more of the following operations, each of which is generally complex and which should have the undivided attention of the engineer.

I refer to alkali fusions, which are generally preliminary operations.

Sulphonation, which involves the use of either artificial or fuming acids.

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Nitration and Liming.—These are operations in which sulphonations are generally decomposed.

Filtration.—Where solids are separated from liquids or *vice versa*. This is an art. It seems simple at first glance to have a solution with insoluble matter suspended in it or a sludge of greater or lesser density requiring filtration, but it is at its best a problem requiring a great deal of thought, time and attention to be able to successfully filter a given liquid from a solid or a solid from a liquid. There are so many conditions of density that only long experience can point the way successfully.

It is to be regretted that more young men in our chemical engineering courses have not devoted more time and attention to this particular branch of chemical engineering. Little has been published upon it, and the information that has been gained by those who have worked upon filtering problems is generally not divulged.

Drying is another chemical engineering subject that is of the utmost importance, since it occurs so frequently in many phases of dye making, from raw materials to finished dyes. I may mention particularly the production of certain of the Amidonaphthol sulphonic acids and disulphonic acids, where both the filtering and the drying determine almost exclusively the value of the finished product. Some of those products depend more upon the skill of the engineer than upon the skill of the chemist.

I could name in succession a number of other important operations, all of which contribute to the successful production of the finished article, and each of which requires that the man in charge—the directing genius, if I may use that term—should be equipped and trained to take care of that particular phase of the work.

Referring again to the amidonaphthol sulphonic acids, I may mention that with the exception of one plant—and that one located in France—no single chemist has been able to successfully carry out every single operation from the conversion of the naphthalene in the first instance to the grinding and

sieving of the finished product. This may appear to be a strong statement, but if we consider that to produce these finished products almost every operation previously referred to is involved, it is safe to say that no one industrial chemist or chemical engineer is sufficiently familiar with the innermost details to permit him to successfully direct the work upon every stage in the chain of processes.

[THE END]

SULPHUR DYESTUFFS FROM VEGETABLE MATERIALS

Z. Suzuke, of Los Angeles, Cal. (Amer. Pat. 1,244,795), describes a process for securing a fast sulphur brown from rice hulls. They are dissolved in caustic alkali and the solution is then heated with sodium sulphide and sulphur until the reaction is complete. The product is evaporated to dryness and is then ready for use on cotton goods. Modifications of the shade are obtained by adding at the beginning the bran of rice or various cereals or buckwheat hulls.

In another patent of the same date (Amer. Pat. 1,244,796) the same inventor makes use of tobacco stems in a similar manner. The color obtained is likewise a dark brown, and can be modified to some extent by adding at the beginning rice or white straw. It is to be noted in this connection that several patents have been issued during recent years for the manufacture of sulphur colors from carbohydrates and similar vegetable material. All yield brown dyes.

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A NEW DYEING MACHINE

Henry Higgs, of Amsterdam, N. Y., describes (Amer. Pat. 1,229,612, assigned to the Klauder-Weldon Dyeing Machine Co., of Amsterdam.) a machine for use in both washing and dyeing which is of a somewhat complex nature but which, nevertheless, materially heightens the uniformity of the work and the rapidity of the operation.

Essentially, the machine consists of a rotary chamber composed of several compartments adapted to contain textile materials. These compartments are formed by longitudinal concave-convex walls (the concavity of one wall facing the convexity of an adjacent wall), traverse end walls and peripheral walls. The machine is placed in a vat provided with the necessary gear and transmission to cause rotation, and is continuously submerged while this rotation is taking place. The walls referred to consist largely of perforated plates or wire gauze. The peculiar construction, better understood by a study of detailed drawings, is such as to give to materials placed in the various compartments a rolling, or epicyclic, movement. It is claimed that this favors the penetration of the textile fabrics by the dye liquors at every angle.

The process for producing dyestuffs from weeds, originated by William Ficker, will be exploited by the newly incorporated Southern Chemical and Dye Co., which has been authorized at New Orleans with a capital of $150,000.

In hoc signo vincimus

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NOTES OF THE TRADE

Claiming that a shipment of dyes en route from Tien-Tsin, China, to New York City, via San Francisco, had been tampered with to such an extent that they were delivered in an unsalable condition, the Sino-American Trading Corporation has entered suit against the Delaware, Lackawanna & Western Railroad for $7,333.

The well-known firm of L. B. Holliday & Co., England, will in future be known as L. B. Holliday & Co., Ltd., this concern having been formed into a limited company with a nominal capital of $1,250,000, of which over $1,000,000 has already been subscribed.

With a capital of $50,000, the New England Chemical Company has been incorporated under the laws of Massachusetts to manufacture, export and generally deal in dyestuffs and chemicals. The incorporators are Grosvenor Calkins, president and clerk; G. O. Mitchell, treasurer, and John C. Jones, Jr.

Plans have been filed and a contract awarded by the Dow Chemical Company, Midland, Mich., for the construction of a new two-story power plant in connection with its works at Merrill, that State.

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H. Y. McBride, who recently claimed to have discovered a new method of scouring wool with dry chemical powders, thereby saving valuable by-products lost when the wet process is used, is reported to be negotiating for the establishment of a wool scouring plant at Artesia, N. M.

Having purchased the mill properties owned by Dwight Ashley at Paterson, N. J., the Washington Piece Dyeing Company, a comparatively new concern, is building an addition to the works which is expected to be ready for the establishment of a piece dyeing business therein very shortly.

The first independent attempt by a Colombian textile mill to do its own dyeing on Colombian cotton has been made by the Fabrica de Tejidos Obregon, located at Barranquilla, Colombia, where dyeing machinery has recently been installed. Heretofore the firm has used only sulphur black, but will in future attempt other shades.

Judge Hendrick, of the Supreme Court, has upheld the Swiss Colours Co. in its verdict for $2,500 against the Jefferson Manufacturing Co. The defendants claimed that goods were not up to samples, but the court ruled that delivery had been accepted.

With a capital of $500, the Producers Chemical Corporation, New York, has been incorporated under the laws of that state to manufacture dyes. Incorporators are John J. Smart, George Lebers and John H. Allen.

The Georgette Silk Corporation, of New York City, has increased its capital from $30,000 to $99,000.

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